

What is claimed is:

1. A servo device, comprising:

means for detecting and comparing sizes of sub-spots being irradiation ranges of sub-beams irradiated to an optical disc when one sub-beam is defocused on a positive position with respect to the optical disc and another sub-beam is defocused on a negative position with respect to the optical disc at a time of irradiating a main beam and the two sub-beams to the optical disc, detecting a focus error signal associated with the optical disc, and performing a focus control operation.

2. The servo device as set forth in Claim 1, wherein said means detects and compares a light intensity balance of a main spot being an irradiation range of the main beam and light intensity balances of sub-spots being irradiation ranges of the sub-beams, detects a tracking error signal associated with the optical disc of the main beam, and performs a tracking control operation.

3. The servo device as set forth in Claim 1, wherein said means comprises:

two sub-photo detectors for detecting intensity distributions of reflected light elements associated with the sub-beams, and outputting sub-beam intensity signals;

focus error signal generation means for comparing one sub-beam intensity signal with another sub-beam intensity signal, and generating and outputting the focus error signal; and

focus control means for controlling a focus of the main beam for the optical disc on the basis of the focus error signal.

4. The servo device as set forth in Claim 3, wherein said means detects and compares a light intensity balance of a main spot being an irradiation range of the main beam and light intensity balances of sub-spots being irradiation ranges of the sub-beams, detects a tracking error signal associated with the optical disc of the main beam, and performs a tracking control operation.

5. The servo device as set forth in Claim 3, further comprising:

a main photo detector for detecting an intensity distribution of reflected light of the main beam and outputting a main beam intensity signal;

tracking error signal generation means for comparing the main beam intensity signal with the sub-beam intensity signals, and generating and outputting a tracking error signal; and

tracking control means for controlling a tracking operation for the main beam on the optical disc on the basis of the tracking error signal,

wherein the sub-photo detectors include a plurality of photodiodes so that light intensities associated with sub-spots on both sides of a boundary based on a direction of a linear velocity of the optical disc can be detected.

6. The servo device as set forth in Claim 3, wherein each of the sub-photo detectors comprises:

a photodiode on which at least three rectangular light receiving areas are arranged on the same plane, long-length sides of the light receiving areas being parallel with each other and a shift direction of reflected light of each of the sub-beams irradiated to the photodiode according to a wavelength change of the laser light element.

7. The servo device as set forth in Claim 6, wherein said means detects and compares a light intensity balance of a main spot being an irradiation range of the main beam and light intensity balances of sub-spots being irradiation ranges of the sub-beams, detects a tracking error signal associated with the optical disc of the main beam, and performs a tracking control operation.

8. The servo device as set forth in Claim 6, further comprising:

a main photo detector for detecting an intensity distribution of reflected light of the main beam and outputting a main beam intensity signal;

tracking error signal generation means for comparing the main beam intensity signal with the sub-beam intensity signals, and generating and outputting a tracking error signal; and

tracking control means for controlling a tracking operation for the main beam on the optical disc on the basis of the tracking error signal,

wherein the sub-photo detectors include a plurality of photodiodes so that light intensities associated with sub-spots on both sides of a boundary based on a direction of a linear velocity of the optical disc can be detected.

9. The servo device as set forth in Claim 1, wherein the main beam and two sub-beams are split and generated as diffracted light elements when a single laser light element is diffracted by a diffraction grating.

10. The servo device as set forth in Claim 9, wherein said means detects and compares a light intensity balance of a main spot being an irradiation range of the main beam and light intensity balances of sub-spots being irradiation ranges of the sub-beams, detects a tracking error signal associated with the optical disc of the main beam, and performs a tracking control operation.

11. The servo device as set forth in Claim 9, further comprising:

a main photo detector for detecting an intensity distribution of reflected light of the main beam and outputting a main beam intensity signal;

tracking error signal generation means for comparing the main beam intensity signal with the sub-beam intensity signals, and generating and outputting a tracking error signal; and

tracking control means for controlling a tracking operation for the main beam on the optical disc on the basis of the tracking error signal,

wherein the sub-photo detectors include a plurality of photodiodes so that light intensities associated with sub-spots on both sides of a boundary based on a direction of a linear velocity of the optical disc can be detected.

12. A method for performing a focus control operation for an optical disc, comprising the steps of:

irradiating a main beam and two sub-beams to the optical disc, defocusing one sub-beam on a positive position with respect to the optical disc, and defocusing another sub-beam on a negative position with respect to the optical disc;

detecting intensity distributions of reflected light elements of the sub-beams and outputting sub-beam intensity signals;

comparing one sub-beam intensity signal with another sub-beam intensity signal and generating a focus error signal; and

performing the focus control operation for the main beam on the optical disc on the basis of the focus error signal.

13. The method as set forth in Claim 12, wherein the main beam and sub-beams are split and generated as diffracted light elements when a single laser light element is diffracted by a diffraction grating.

14. A device for recording/reproducing information of an optical disc using a main beam, comprising:

an optical pick-up device having an object lens for irradiating the main beam and sub-beams to the optical disc, defocusing one sub-beam on a positive position with respect to the optical disc, defocusing another sub-beam on a negative position with respect to the optical disc, and receiving and projecting reflected light elements of the main beam and sub-beams; and

a servo device for detecting and comparing sizes of two sub-spots being irradiation ranges of the sub-beams for the

optical disc and performing a focus control operation for the main beam on the optical disc.

15. The device as set forth in Claim 14, wherein the optical pick-up device comprises:

a light source for projecting a single laser light element; and

a diffraction grating for splitting the laser light element into the main beam being a 0-order light element and the sub-beams being ±1st-order light elements.

16. The device as set forth in Claim 15 , wherein the diffraction grating is an off-axis hologram.

17. The device as set forth in Claim 14, wherein the servo device comprises:

two sub-photo detectors for detecting intensity distributions of reflected light elements of the sub-beams, and outputting sub-beam intensity signals;

focus error signal generation means for comparing the one sub-beam intensity signal with another sub-beam intensity signal, and generating and outputting the focus error signal; and

focus control means for controlling a focus of the main beam for the optical disc on the basis of the focus error signal.